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French forests.

A VERY CAREFUL and thorough discussion of the forests of France has come from MM. Boppe and Joylet of the national school of forestry at Nancy.[2] The work begins with a discussion of the form and reproduction of a tree as influenced by its environment, followed by descriptions of the principal native species, in which the habitat, distribution, and forest value of each are given. Then follows a detailed treatment of the forest-stand, the influence of its trees upon the soil and upon each other. An aggregation of stands makes a forest. As concerns forests, the climate of France falls into two great divisions: (1) that of the plains, subdivided into three zones according to the distribution of the rainfall and the resultant forest growth; and (2) that of the mountains, the climate of each mountain system being treated separately.

The greater part of the book is devoted to a detailed discussion of the methods and principles of sylviculture as employed in France. Of special economic interest is the account of the reforestation of denuded mountain slopes and of the fixation of sand dunes.

In the treatment of the forests in their biological and sylvicultural relations this book covers the ground more thoroughly than any American treatise on a similar subject.—C. D. HOWE.

MINOR NOTICES.

ALICE R. NORTHROP[3] has published an account of the flora of two of the Bahama islands, with an enumeration of the plants collected by John I. Northrop and herself in 1890, a collection including 542 species. After some description of the general ecological features of the region, the list of plants is given. Several new species from the collection had previously been described by various authors, and the present publication contains additional new species, and also two new genera of palms (*Paurotis* and *Cyclospathe*), described by O. F. Cook. Following the list is a study of the relations of the Bahama flora, as illustrated by the collection of the author. Of the 453 native vascular plants found on New Providence and Andros, 176 are reported from other islands of the group, 335 from Cuba, 250 from southern Florida, 108 from southern United States, 286 from Jamaica, 190 from Virgin islands, 223 from Windward islands, 196 from Mexico and Central Mexico, and 199 from South America.—J. M. C.

NOTES FOR STUDENTS.

HUNGER[4] has studied the granules which occur in the thallus of Dictyota. He finds that the smaller ones near the plastids are of a monosaccharid nature. The larger granules in the interior of the cells are composed largely of polysaccharid and contain considerable tannin.—BURTON E. LIVINGSTON.

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[2] BOPPE. L., and JOYLET, ANT., Les forêts, traité pratique de sylviculture, pp. xi + 488. 95 photogravures. Paris: J. B. Baillière & fils. 1901.

[3] NORTHROP, ALICE R., Flora of New Providence and Andros (Bahama islands). Mem. Torr. Bot. Club **12**: 1–98. *pls. 1–19.* 1902.

[4] HUNGER, F. W. T., Ueber das Assimilations-Product der Dictyotaceen. Jahrb. Wiss. Bot. **38**: 70–82. 1902.

T. J. and M. F. L. FITZPATRICK[5] give a short account of the genetic development of the island vegetation of the Mississippi river near Sabula, Iowa. The characteristic species associated with the willow-cottonwood-elm society are listed and the significance of certain tendencies indicated.—J. M. WESTGATE.

HUŠEK[6] finds the grains in the root-cap of *Allium Cepa* to be the so-called "red starch;" beside amylodextrin they contain a little real starch and some dextrin. The red starch is formed only at ordinary temperatures. The amyloplasts are confined to the root-cap. If the tip is removed, they occur in the regenerated tip. They are formed there *de novo* from the cytoplasm in Allium.—E. B. COPELAND.

GUIGNARD[7] has just reported double fertilization among the Cruciferae. The forms studied were *Capsella Bursa-pastoris* and *Lepidium sativum*, which prove to be almost identical in their main features. The polar nuclei fuse late, just before the entrance of the tube, the fusion-nucleus lying very close to the oosphere. The male cells are small and ovoid, and after discharge from the tube pass so rapidly to the oosphere and the fusion-nucleus as not to be caught in the preparations during their passage. The fusion of the male cell with the endosperm nucleus is very much more rapid than the fusion of its mate with the egg. It seems to be more and more evident that the so-called double fertilization is a very general phenomenon among angiosperms.—J. M. C.

BREUNER[8] has made an ecological study of the oak leaves of the world, as to their general adaptations to their native climates. His work includes a study of cultivated or herbarium material from all lands where oaks grow, and some experiments upon living material to show the influence of illumination upon the size, form, and structure of the leaves. Except for the excessive individual variability of oak leaves, the genus is a most favorable one for such work. The results of experiments, and of local differences in environment correspond to the specific characters in the climates imitated; whence Breuner concludes "that the modifications in plants called forth by external causes become hereditable, and in the course of evolution may develop into specific characters."—E. B. COPELAND.

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[5] FITZPATRICK, T. J. and M. F. L., A study of the island flora of the Mississippi river near Sabula, Iowa. Plant World **5**: 198–201. 1902.

[6] HUŠEK, G., Ueber Stärkekörner in den Wurzelhauben von *Allium Cepa.* Reprint, Sitzber. K. Böhm. Gesells. Wissens. 1902. 10 pp.

[7] GUIGNARD, L., La double fécondation chez les Crucifères. Jour. Botanique **16**: 361–368. *figs. 20.* 1902.

[8] BREUNER W., Klima und Blatt bei der Gattung Quercus. Flora **90**: 114–160. 1902.

THE GEOTROPIC RESPONSE in jointed plants is the subject of an extensive article by Miehe,[9] who has added much to the work done in this field by Kohl[10] two years ago. Tradescantia and Zebrina were used in a long series of experiments, which, however, cannot be even outlined here. Miehe believes he has shown that Kohl's conclusions are not well founded. Kohl's work seemed to show that two nodes were necessary for bending, the upper acting as a perceptive region while the lower was responsive. Thus in a cut portion of stem the apical node did not bend, but bending occurred in all nodes behind this. Miehe's explanation of this and other observed phenomena is that we have here to deal with an inhibition of the geotropic response in the node nearest the cut. He shows that various other factors will influence the geotropic response in a similar way. Three terms are proposed to describe these and kindred phenomena: *katatonus*, to denote a checking of power to respond normally; *anatonus*, an acceleration of this power; and *metatonus*, a complete reversal of the response. From the present paper it may be regarded as certain that the case is at least not so simple as was thought by Kohl.— BURTON E. LIVINGSTON.

HEGI[11] presents the historical features of the flora of a limited area lying within the cantons of Zurich, St. Gall, and Thurgau, Switzerland. The Miocene fossils indicate a subtropical climate at that time, while the plant remains associated with the interglacial beds record the climatic and floristic changes incident to the Pleistocene conditions. After the final retreat of the ice-sheet the associated non-glaciated areas contributed the various species which characterize the area in question today. The "xerothermische" floristic element from the Mediterranean region was at first perhaps the most effective, since the extreme cold of the Pleistocene times was apparently followed by a period of aridity and comparatively high temperatures. With the advent of the present climatic conditions the "silvestre" element (forest trees and associated vegetation) from the region northeast of the Caspian sea, became the dominant vegetative covering of the area. A third element of the flora is the class known as "glacial relicts" which, while numerous as to species, is limited as to distribution and the number of individuals. A considerable portion of the paper is given over to an annotated list of the present flora, which is based largely upon the author's personal collections and observations.—J. M. WESTGATE.

INTERESTING STUDIES on the effect of centrifugal force upon seeds and plants, with respect to both the arrangement of cell parts and the later effect

[9] MIEHE, HUGO, Ueber correlative Beeinflussung des Geotropismus einiger Gelenkpflanzen. Jahrb. Wiss. Bot. **37**: 527–593. *pls. 12, 13a, 13b.* 1902.

[10] KOHL, F., Die paratonischen Wachsthumskrümmungen der Gelenkpflanzen. Bot. Zeit. **58**: 1–28. *pls. 2.* 1900.

[11] HEGI, GUSTAV, Das obere Tösstal und die angrenzenden Gebiete floristisch und pflanzengeographisch dargestellt. Bull. Herb. Boiss. II. **1**: 179. 1900; **2**: 216. 1901, 1902.

upon growth have been made by Andrews[12] in the Leipzig laboratory. A centrifugal force equal to 1,400 times the force of gravity was used. Seeds subjected to this force for three or four hours were found to have their cell contents displaced. The nucleus is always of higher specific gravity than cytoplasm and cell sap, while oil drops are of lower. Starch and proteid grains, chloroplasts and chromoplasts, have, of course, a relatively high specific gravity. The cell contents of seeds so treated gradually return to their original arrangement, but in case the seeds are kept dry this process may take several months, whereas if they are planted in moist saw dust the normal condition is usually reached within a day or two. When the return of the cell contents to their usual position is slow, growth seems to be retarded also. The contents of sieve tubes can be extruded by this centrifugal force, but are reformed in time, the reformation going on twice as rapidly in light as in darkness. The methods described are apparently very good and we hope to gain more knowledge along these lines. Perhaps quantitative measurements made in this field may at length give some insight into the physics of cytology.— BURTON E. LIVINGSTON.

IN A RECENT PAPER Dr. Harshberger[13] reports additional observations along the New Jersey coast, incorporating in the article the results of Dr. T. S. Githens's study of the Absecon beach strand, and promising a future paper on mutation in *Hibiscus Moscheutos* L. Corn was found in the drier regions of a salt meadow at Holly beach. Along Barnegat bay wind-swept hollows occur which, when sufficiently deep to reach wet sand, are characterized by a swamp flora. Maps aid greatly in obtaining a clear idea of the distribution of species in these wind sweeps, but have the disadvantage of requiring a double translation of their legends. The appearance of fungi is accounted for by the presence of drift-wood under the dunes. *Ruppia maritima* L. found in Barnegat bay appears to be the only aquatic which can endure the alternation of fresh and salt conditions caused by the occasional entrance of the ocean through passages across the peninsula. Near Piermont occur the highest dunes of the New Jersey series (40–50 feet), back of which lies a deciduous forest. Lianes of the covered forest continue to grow upon the dune which destroyed their original support. At Sea Side Park, on account of the absence of trees, the prevailing west wind gives to the dunes a steep seaward face. The shape of the coastal trees is considered to be due more to sand-blast action than to the salt wind.—LAETITIA M. SNOW.

FIVE PAPERS dealing with the chemistry of plant life have recently been published by K. Aso. In the first of these,[14] it is shown that manganese

[12] ANDREWS, F. M., Die Wirkung der Centrifugalkraft auf Pflanzen. Jahrb. Wiss. Bot. **38**: 1–40. 1902.

[13] HARSHBERGER, J. W., Additional observations on the strand flora of New Jersey. Proc. Acad. Nat. Sci. Phila. **1902**: 642–669.

[14] ASO, K., On the physiological influence of manganese compounds on plants. Bull. Coll. Agric. Imp. Univ. Tokyo **5**: 177–185. *pls. 14–17.* 1902.

compounds in very weak solution act as a stimulant upon radish, barley, wheat, and pea. This action was manifested in culture solutions containing manganous phosphate in a concentration of 0.002 per cent.

In the next two papers[15] experiments with sodium fluorid and sodium silico-fluorid are reported. Both of these substances show a stimulation effect in very great dilution, but the latter is a much more violent poison than the former.

In the fourth paper[16] oxidizing enzymes of plants are considered. Besides the guaiac reaction for these enzymes and that with guaiacol and hydrogen peroxid, the author was able to obtain from many vegetable tissues the reaction of Storch with paraphenylendiamin and hydrogen peroxid. He also found a new reaction for oxidizing enzymes, namely, the production of a deep violet color on addition of tetramethylparaphenylendiamin and hydrogen peroxid, a reaction which was obtained from various plant tissues. Sodium fluorid and silico-fluorid interfere with the color reactions of these tests, as does also tannin, but not sugars. By addition of two volumes of absolute alcohol to one volume of plant juice, oxidase is precipitated, while most of the other oxidizing enzymes are left dissolved.

In the fifth paper,[17] the various forms of calcium in plants are treated. In potato and buckwheat only a small amount of lime compounds soluble in water are present, while in barley and clover they are more abundant. It appears that the amount of lime increases with the increase of chlorophyll.—BURTON E. LIVINGSTON.

J. C. SCHOUTE has been investigating the morphology of the stelar system of the higher vascular plants.[18] His studies relate to the histogenesis and comparative anatomy of the tissues in the flowering plants, and the work is divided into two corresponding parts.

In the first part the author describes his investigations on the structure of the stem-apex and root-apex in a number of angiosperms, and comes to the conclusion that the meristematic layers of Hanstein, the dermatogen, the periblem, and the plerome do not correspond at all accurately to the division of the tissues of the vascular plants into epidermis, cortex, and central cylinder, as proposed by Van Tieghem and others. He further finds that there is too much inconstancy in the cell wall reticulum of the growing point, especially in the case of the stem, for it to be regarded as of very great value as a clue to the morphology of the tissues. The author uses exceptionally exact methods in the study of the growing point, and takes great pains to secure exactly median and very thin sections.

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[15] ASO, K., The action of sodium fluorid upon plant life. *Ibid.* 5: 187–195. *pls. 18–19.* 1902.

———, On the action of sodium silico-fluorid upon plants. *Ibid.* 5: 197–198. 1902.

[16] ———, On oxidizing enzymes in the vegetable body. *Ibid.* 5: 207–235. 1902.

[17] ———, On the different forms of lime in plants. *Ibid.* 5: 239–242. 1902.

[18] SCHOUTE, J. C., Die Stelar-Theorie. Proefschrift, Groningen, December 1902.

In the second part he describes his examination of the stems of a large number of dicotyledons and monocotyledons, for the presence of an endodermis (phloeoterma of Strasburger), and from his own observations and the literature of the subject draws up a comprehensive tabular view of the occurrence of this layer. He finds, contrary to Fischer, that an endodermis is a very constant feature of the stem in monocotyledons, being present in 18 families out of 19 investigated. In the case of the dicotyledons, it was present in 99 out of 169 families. The author draws the conclusion that the endodermis is a very important layer morphologically. Taking into consideration the recent work on the ontogeny of the central cylinder, he agrees with Boodle, that the central cylinder of all vascular plants is morphologically the same, viz., monostelic.—E. C. JEFFREY.

WILLIS,[19] in continuing his studies of the oriental Podostemaceae, has published a most interesting account of the habits and ecological relations of the Ceylonese and Indian forms. All members of the family live in rapidly moving water, usually in the rapids and waterfalls of mountain streams. In general they are attached to rocks, each species affecting a particular habitat, determined by speed, depth, and roughness of the water. These various factors are fully described under each species. The most problematical and characteristic structure of the group is the so-called "thallus," a creeping dorsiventral organ developed from the primary axis, and itself bearing endogenous secondary shoots. In different genera the thallus seems to be of different morphological value, but in the main it has been regarded as a root structure, which raises a question as to the essential character of a root. In any event, the function of the thallus, which often resembles an alga, a lichen, or a liverwort, is to spread rapidly over rocks, developing new shoots at short intervals, and holding them in the swiftly running water until they can form holdfasts of their own.

Probably the most significant part of the paper is the discussion of the dorsiventrality of the group, no other family above liverworts showing so marked and far-reaching a dorsiventrality in organization. The author presents a series of forms passing from the least modified forms, in which dorsiventrality is only expressed by the position of the thallus, to the most highly modified forms, in which dorsiventrality appears in every part, even in the embryo. The very interesting conclusion is reached that, as in the whole family dorsiventrality appears first in the vegetative organs and then includes other members, the dorsiventrality of the flowers, which is the most important diagnostic feature of the family, is a direct result of that of the vegetative organs; in other words, that the dorsiventrality of the floral organs has been forced upon them by that of the vegetative organs, without any reference to the advantages or disadvantages to be derived from it in the performance of the functions of the floral members themselves. The whole paper, accompanied by its numerous well-executed plates, must be read in order to get its full bearing upon several important problems.—J. M. C.

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[19] WILLIS, J. C., Studies in the morphology and ecology of the Podostemaceae of Ceylon and India. Ann. Roy. Bot. Gardens Peradeniya **1**:267–465. *pls. 4–38.* 1902.

ITEMS OF TAXONOMIC INTEREST are as follows: P. HENNINGS (Hedwigia **41**:295–311. 1902) has described the new genera *Capnodiopsis* (Capnodiaceae) and *Pseudobeltrania* (Dematiaceae), from the Puttemans's collection of the fungi of São Paulo, and also (Beiblatt Hedw. **41**: 209–215. 1902) a new genus (*Battareopsis*) of Secotiaceae from the Schweinfurth Egyptian collection of 1901–1902.—R. CHODAT and E. WILCZEK (Bull. Herb. Boiss. II. **2**: 527. 1902) have described a new genus (*Oligocladus*) of Umbelliferae (Peucedani) from Argentine.—F. B. FORBES and W. B. HEMSLEY (Jour. Linn. Soc. **36**: 1–72. 1903), in the current part of their enumeration of all the plants known from China proper, Formosa, Hainan, Corea, the Luchu Archipelago, and the island of Hong Kong, enumerate 352 species of Orchidaceae, including 23 new species and a new genus (*Hancockia* Rolfe).—N. BRYHN (Nyt Mag. Naturvidensk. **40**:204–208. *pls. 1–2.* 1902) has described a new genus (*Sarconeurum*) of mosses (Pottiaceae) from the antarctic collections made on the Borchgrevink expedition of 1898–1900.—A. P. MORGAN (Jour. Mycol. **8**:169. 1902) has described a new genus (*Sporocystis*) of Tuberculariaceae from Ohio, and has also (*idem* 179–192) published a list of the Discomycetes of the Miami valley, Ohio, including 128 numbers, 7 of them being new species.—J. B. ELLIS and E. BARTHOLOMEW (*idem* 173–178), in describing 23 new species of fungi from various localities include a new genus (*Stachybotryella*) near Stachybotrys, from Austin, Texas.—ANNA MURRAY VAIL (Bull. Torr. Bot. Club **29**:662–668. *figs. 7.* 1902), in her sixth "Study" of Asclepiadaceae, has defined and illustrated 7 species of Rouliniella, 3 of them being new.—L. M. UNDERWOOD (*idem* 669–679), in his fifth paper on American ferns, has published a review of Danaea, recognizing 12 species, 5 of which are new.—P. A. RYDBERG (*idem* 680–693), in his ninth "Studies on the Rocky Mountain Flora," has taken up the Nyctaginaceae, describing new species of Abronia (6) and Allionia (3), and establishing a new genus (*Allioniella*) on *Allionia oxybaphoides*.—ALICE R. NORTHROP (Mem. Torr. Bot. Club **12**: 1–98. *pls. 1–19.* 1902), in her account of the flora of two of the Bahama islands (New Providence and Andros), includes two new genera of palms (*Paurotis* and *Cyclospathe*) described by O. F. Cook, besides new species of Aletris, Hymenocallis, Vanilla, Pithecolobium, Cassia, Linum, Erythroxylon, Crassopetalum, Helicteres, Xylosma, Terminalia, Metastelma, Heliotropium, Tecoma, Catesbaea, Myrstiphyllum, Anguria, and Eupatorium; also a new species of Thrinax by O. F. Cook, and of Phoradendron by I. Urban.—KARL MÜLLER (Bull. Herb. Boiss. II. **3**: 34–44. *pl. 1.* 1903) has described several new species of Scapania from North America.—J. M. C.

RECENT CONTRIBUTIONS TO AMERICAN PHYTOGEOGRAPHY: the Central United States. W. L. BRAY published in this journal (BOT. GAZ. **32**:99–123, 195, 217, 262–291. 1901) a most valuable paper on the ecological relations of the Texas vegetation.—W. H. LONG'S work on the distribution of fungi about Austin, Tex., has been previously noted (BOT. GAZ. **30**: 429. 1900).—C. H. FITCH (U. S. Geol. Surv. Ann. Rept. **21**: 603–672. 1900) has given a detailed description, section by section, of the woodlands of Indian Territory.—K. K. MACKENZIE and B. F. BUSH, in their manual of the flora of Jackson county, Missouri, previously mentioned in this journal (BOT. GAZ. **34**:310. 1902), list a number of ecological habitats with their characteristic species.—J. M. WESTGATE (Science **15**:462. 1902) traces the genetic development of the vegetation on an island in the Kansas river, giving the results of a four years' study. There have been rapid changes from xerophytic to mesophytic conditions, and these changes have been recorded by serial photographs. The actual succession of plants, as witnessed from year to year, confirms comparative studies made elsewhere.

B. SHIMEK (Proc. Iowa Acad. Sci. **7**: 47–59. 1899) discusses in a most suggestive manner the distribution of forest trees in Iowa. He reviews the various theories that have been supposed to account for the treelessness of prairies, giving in footnotes a large number of citations. The fire theory has had the larger number of adherents; too much emphasis has been given to this cause, but the author thinks it of some value. Lesquereux's swamp theory explains some prairies, but not those on loess hills. Insufficient atmospheric moisture is of much importance, but cannot explain the alternation of prairie and forest in eastern Iowa. The soil character has some place. The author rightly holds that most writers have erred chiefly in holding to one theory, and discarding others. He accepts all of the above theories as of more or less value, and adds some further notes on the influence of wind, which he thinks has been too little dwelt upon. This, Shimek holds, explains the preponderance of trees in eastern Iowa, where the winds are less vehement. The wind theory accounts for trees in sheltered situations along streams, also for their relative absence on the Iowa side of the Missouri river, as compared with the Nebraska side. Tree planting experiments yield similar data.—L. H. PAMMEL (Pharm. Rev. **19**: 117, 156. 1901) gives the northern limits within Iowa of several trees of southern range, and in his *Grasses of Iowa* (see BOT. GAZ. **32**:429. 1901) discusses the pastures, meadows, and weeds of the state, chiefly from an economic aspect.

ROSCOE POUND and F. E. CLEMENTS'S admirable Phytogeography of Nebraska has been previously reviewed in this journal (BOT. GAZ. **25**: 370. 1898; **32**: 374. 1900).—C. E. BESSEY (Forester **6**: 240–243. 1900; see BOT. GAZ. **31**: 133. 1901) has treated in an interesting manner the natural spreading of timber areas in Nebraska. He finds that the pines in the northwest, and the deciduous trees in the east are extending their domain with some rapidity. This he attributes chiefly to the restriction of prairie fires in recent years. The pines spread easily without the aid of other plants, but the deciduous trees come up under a cover furnished by roses, plums, and other shrubs; these in turn are preceded by herbaceous plants. The same author (*idem* 7:314–319. 1901) discusses the distribution of twenty native forest trees of Nebraska. As Professor Bessey has previously shown, most of these trees have doubtless migrated from the east along the Missouri river; probably more than fifty species have entered the region in this way, while but ten species have migrated eastward from the mountains. The maps, especially those showing the oaks and hickories, are very suggestive. The author has considered the same subject more fully in another paper (Nebr. State Board of Agric. Ann. Rept. **1899**: —. 1900). In the fifteenth annual report of the botanist (1901), entitled "Some Agricultural Possibilities of Western Nebraska," Professor Bessey gives an account of the physical features and the vegetation of the sand hills and foothills. In the sand hills there are twenty-four species of trees, mostly of eastern affinities, and growing chiefly in cañons or along the rivers. Forty-eight shrub species occur, twenty of which are of western affinities. The grasses are fully considered. In the foothills there are twenty species of trees occurring on the ridges and in the cañons. More western forms (but not a majority) are found than in the sand hills. Professor Bessey (Science **14**: 185–187. 1901) gave an itinerary for botanists en route to Denver, showing what could be seen from the car window in Nebraska. He also (*idem* 721–724) wrote concerning the early winter colors of the plant formations on the plains, noting the wide range of color aspects and the color tendencies of various formations.—W. L. HALL (Forester 7:188–193. 1901) tells of the interesting tree planting experiments being made in Nebraska.—J. J. THORNBER (Bot. Surv. Neb. V. 1901) has made a statistical study of the prairie-grass formation in region I, near Nebraska City. Physical data of various sorts were collected, phenological observations were carefully made, and the various habitat-groups were studied. An interesting point brought out in the discussion of ecological factors is the much more favorable light relation in woods than in thickets. The body of the paper is on the structure of the formation, in which the controlling species are mentioned in the different habitats. A feature of the paper (wanting in many studies because an account of a region is made as a result of a week's study) is the presentation of the aspect of the prairie, season by season (prevernal, early vernal, late vernal, early estival, late estival, serotinal). A vast number of counts and diagrams of individuals in selected quadrants completes the paper.—G. G. HEDGCOCK (*idem* VI, 1902) has studied the relation of the water content of the soil to certain plants, principally mesophytes. Among other results he finds that plants wilt and die in saline soils, while the per cent. of water is still relatively high, whereas in sand the per cent. of water at which plants wilt or die is lower than in other soils. Seedlings grown in sand are more turgid than those grown in humus. The most watery plants are often the least vigorous

Dying xerophytes contain but little water; while dying hydrophytes contain much; hydrophytes lose water more rapidly than the soil, xerophytes less so. The per cent. of non-available water in a soil increases as the square root of the per cent. of the soluble salts.

W. A. WHEELER (Minn. Bot. Stud. **2**: 353–416. 1900) has written an ecological account of the vegetation of southeastern Minnesota. He notes a wide difference between the vegetation of river and creek valleys. The north-facing slopes, as so often is the case, have the climax vegetation of the region. The moist cliffs contain some rare mountain plants, and some southern trees find here their northern limit. The same author (*idem* 569–600. 1901) has presented a contribution dealing with flora of the Red river valley in Minnesota. Some interesting halophytes and semi-halophytes are recorded. Both articles are most beautifully illustrated with heliotypes, which are fully described.— D. LANGE (*idem* 621–630. 1901) gives an account of the revegetation of Trestle island in Lake Phalen, Minn. This island was exposed in 1898 and its successions of forms for three years are recorded.— B. FINK (*idem* 657–709. 1902) continues his study of the lichens of Minnesota, dealing here with those of the northwestern portion of the state. Lists of characteristic species of sixteen rock, tree, and soil formations are given, together with the characteristic adaptations. He discriminates between granitic and limestone formations, and between exposed and shaded portions in each; between rough and smooth-barked trees; between live, dead, and rotten wood; between upland and swamp trees (this seems especially interesting, since Usnea dominates in each case, but with a much greater luxuriance in tamarack swamps), etc. The author thinks that light and moisture are much more important factors in lichen distribution than are either chemical or physical characters of the substrate. It is to be hoped that many more such papers will be published, as the reviewer believes that lichens are the most favorable of all plants for working out problems of distribution. —J. M. HOLZINGER (Plant World **4**: 185–187. 1901) notes some interesting cases of the local distribution of mosses in southeastern Minnesota, far from their normal range. This occurrence is in the driftless area, and these plants may well be relicts from preglacial days.— H. B. AYRES (U. S. Geol. Surv. Ann. Rept. 21: 673–689. 1900) has discussed from an economic standpoint the timber conditions of the pine region of Minnesota. An excellent map accompanies the paper.— H. C. COWLES.